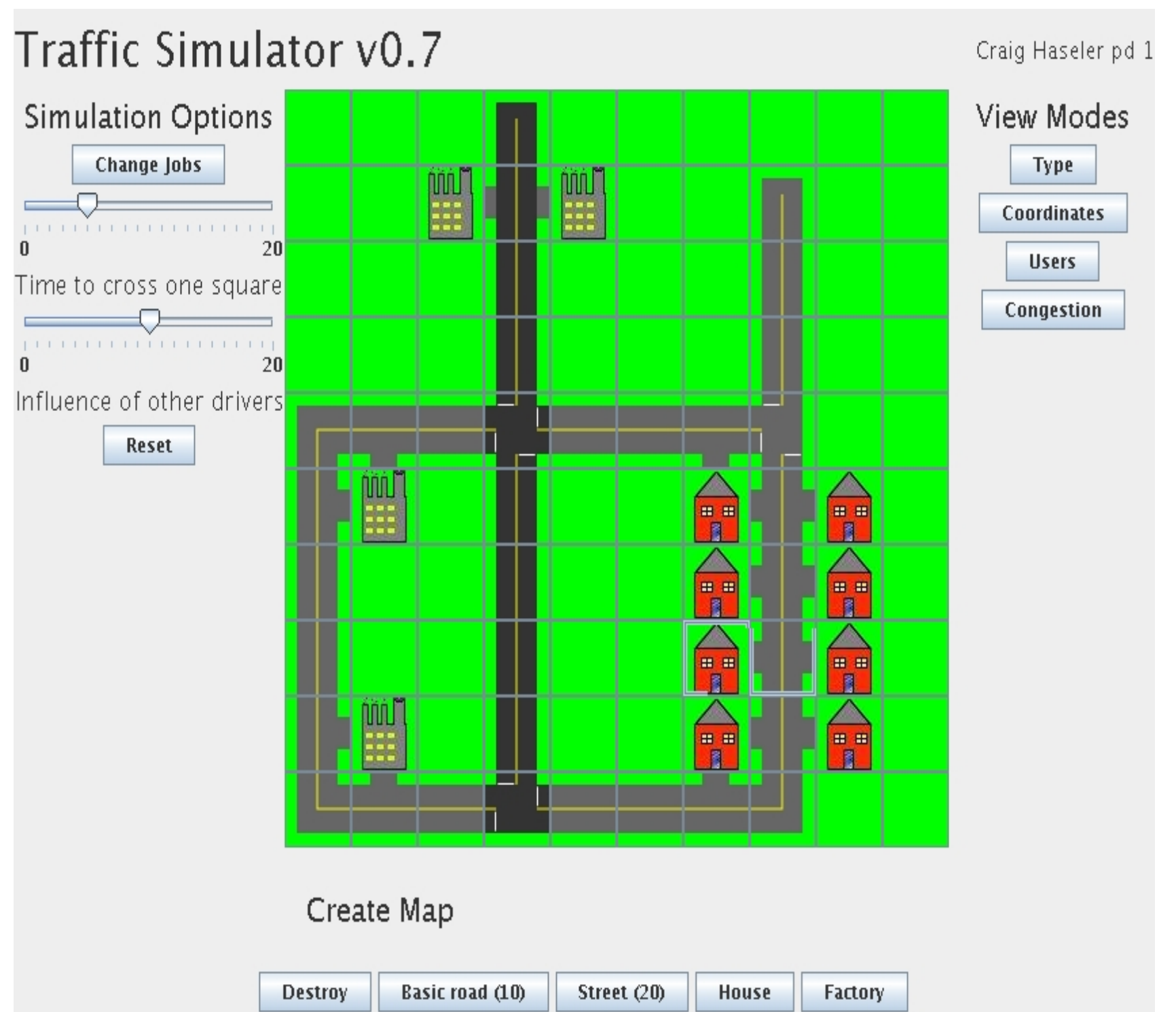


The Tragedy of the Commons in Traffic Routing and Congestion

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Abstract

This project uses Java to create a functional traffic simulation, focusing on routing and congestion rather than individual car physics. We can then use the simulation to make several important conclusions about human behavior. The human tendency to always be self serving is considered an advantage in the economic system of today, but is this also true for other systems? This project could demonstrate the effectiveness of a traffic solution in which a central computer makes decisions rather than individual drivers. While that kind of system is not currently feasible, it will not be long before we will have the technology to implement it on highways at least. In most respects, it will be a simple matter of connecting the cruise control system of cars to a central highway computer bank. Of course, there would be the hurdles of justifying this much control to a computer (and of course the risks), but this project should demonstrate that turning over control to a computer can have significant benefits to society as a whole, even if it causes individuals to make a slight sacrifice.



Introduction

The purpose of this project was to give an example of a situation in which there is in fact an solution to the apparent paradox spelled out in theoretical situations such as the so-called Tragedy of the Commons. In that situation, we are given a theoretical village with a herd of cattle owned by various individuals in the village. They have a restricted amount of commons area on which to graze the cattle. The paradox in the situation is that, unlike the traditional view of economics, the individual actions taken purely out of self interest do not help the village as a whole. If a villager chooses to increase the size of his herd of cattle, it will damage the commons, and potentially even starve the village. However, he still benefits from this overall, as he now has more cows, and is richer himself. This paradox means that people acting purely out of self interest actually hurt the group as a whole, and so the society does not succeed. We see a similar effect in the world of traffic and congestion. People will always act in their own self interest, even if it slows down the system as a whole. My goal here is to demonstrate that the paradox can be solved by having an overall intelligence which makes these decisions for the people, acting in the interest of the system as a whole, rather than the interest of a specific individual.

